Original Article

Wrist ganglions management:aspiration and autologus blood instillation

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Summary:

Background: Ganglions are the most common benign cystic swellings found around the wrist,they can be treated conservatively or by surgical excision,but the net results revieled no significant difference.Complete evacuation of the cysts followed by intracystic autologus blood instillation has given encouraging results.

Objective: To assess the efficacy and safety of aspiration of wrist ganglions and instillation of autologus blood inside the cysts.

Patients and Methods: Aprospective study was conducted on forty patients with wrist ganglions.20% of the patients underwent aspiration of the cysts alone,and the other 20 underwent aspiration of the cysts followed by autologus blood instillation, then an immobilization for seven to ten days.Two years follow-up was done for detection any recurrence.

Results: Most of the patients were females,and the dorsal aspect of the wrist affected more than the volar one. Most of the patients presented mainly because of cosmetic reasons.Recurrence was the only complication encountered and involved 50% in those of group A and 20% in those of group B.

Conclusion: Our technique of aspirating the wrist ganglions and instillating autologus blood is a simple,safe,and effective method for treating wrist ganglions.

Key words: Autologus blood, wrist ganglions.Conservative ganglion management.

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Introduction:

Ganglions are the commonest benign soft tissue tumor around the wrist,consisting of mucin-filled cyst connected to a tendon,tendon sheath,or joint capsule[1].They may also present as intra tendinous or intraosseous[2].Most ganglions present in females in their second,third or fourth decades of life[3].Spontaneous resolution is common with 50% of untreated patients when assessed at six years[4].The cause of ganglions remains uncertain but only small minority give a history of previous trauma[5].Small daughter cysts have been noted in the normal scapholunate ligament at the time of dorsal ganglion excision.These may be the source of fluid that tracks through the joint capsule to form the collection in the more superficial layers.The capsule of the ganglion is formed by compressed stroma without a cellular lining. This may be linked to the joint by a narrow channel which can act as a one way valve[6].

The majority of this kind of tumor(60-70%) is found on the dorsum of the wrist over the scapholunate interval[7].Pain may be the the presenting complaint,but most ganglions are painless.Pain,when present,usually suggests that the cyst is exerting pressure on a nerve .Other patients presentFor consultation because they are worried about how the ganglion looks or worried about malignancy[4]. The diagnosis can be made clearly by history and physical examination but the treatment options have many varieties and each treatment option yields different success results[8].Observation is acceptable in most instances[2].The indications for treatment include; pain,weakness,and disfigurement. The mainstay of conservative treatment is aspiration followed by injection of corticosteroid,this treatment modality provides at least a temporary resolution of the symptoms, but recurrence is high ,so multiple injections sometimes is required[3].Surgical excision has been reported to have the best success rates in terms of recurrence.However,the treatment can only be offered reliably in a specialist hand department and is associated with complications including wound healing problems such as infections,neuroma,keloid formation and the presence of a scar.Other complications include scapholunate dissociation,joint stiffness,damage to the terminal branches of posterior interosseous nerve and decrease grip strength along with risks associated with the use of general anaesthesia and upper limb tourniquet[9]. In this study we present a technique of aspiration and autologous blood istillation .We sought a minimally invasive office procedure with acceptable results in terms of reduction of pain and resolution of size but without the complications mentioned above.

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Patients and methods:

A prospective study was conducted on patients for wrist ganglions (dorsal and volar) from January 2007 to June 2010. A total of forty patients were recruited in this study,they were arranged randomly into group (A) and group (B),twenty patients for each. Before starting the procedure, full medical and surgical history was taken beside proper hand examination and detailed explanation of the adopted technique to the patients.

Using sterile aseptic technique,the involved area was sterilized with povidone iodone solution 10%.A sterile wide bore cannula of size(17) gauge was inserted into the ganglions of the patients of group (A) . A wide bore cannula of size(17) gauge and another of size(22) gauge were inserted into the ganglions of the patients of group (B).The gelatinous content was allowed to escape through the wide bore cannula which was attached to a 10 cc syringe .Gentle compression of the cyst facilitated the procedure .After complete evacuation of the cyst ,the wide bore cannula was withdrawn and the puncture site was seald with a swab.For patients of group (B), an autologus blood was withdrown from the contralateral upper limb and is injected into the cyst cavity via a previously placed size(22)gauge cannula. The amount of the blood being injected was 1/4 to 1/3 of the aspirated amount of the gelatinous material,thus again refilling the cyst cavity but incompletely.The small cannula is now withdrawn and the puncture site was sealed with a swab.A compressive dressing was applied to the aspirated area and the wrist immobilized by splints to prevents or minimizes pumping the synovial fluid into the cyst again. .The position of immobilization was slight dorsiflexion for dorsal wrist ganglions and slight palmar flexion for volar wrist ganglions.The duration of immobilization was 7-10 days to prevent wrist stiffness. Every patient was given injectable cephalosporines one hour before the procedure and oral cephalosporines for the subsequent three days as a prophylaxis against infection beside non steroidal anti-inflammatory drugs as a pain controlled medication on need. The patients were scheduled back for follow up once weekly for the first month after aspiration and then monthly for two years.In each visit ,the patients were asked about pain and any other abnormal symptoms,beside palpating the dorsal wrist in flexed posture for dorsal ganglions and in extension for volar ganglions to detect any recerrent mass.

Results:

Out of total 40 patients , 32 were females and 8 were males,showing female preponderance.The patients presented in the second through the fourth decades of their ages,with highest incidence noted in the second(25 patients) and third(10 patients) decades of life. Ganglions on the dorsal aspect of wrist(70%) were more common than on the volar aspect(30%)[p = 0.2].he dominant hands were involved more(80%) than the non-dominant one(20%).Regarding the patients perception on presentation,table 1 demonstrates the differences.

Table 1.Perception of patients on presentations.[p = 0.2]

perception	No.	%
Cosmetic	20	50
Fear of malignancy	12	30
Pain	8	20

The sizes of ganglions were ranged between 1-2.5 cm in diameter and table 2 demonstrates the details of ganglion sizes. None of the patients had undergone any previous aspiration or surgery before. All the patients presented between 1-12 months of development of the swelling Recurrence was the only complication encountered within 6 months following the procedure and involving 10 patients(50%) in group (A),6 out of 10 were on the volar aspect of wrist and 4 patients(20%) in group (B), 3 out of 4 were on the volar aspect of wrist.

Table 2. The sizes of wrist ganglions .

Diameter of wrist ganglions in cm	Number of patients
1 – 1.5	8
> 1.5 - 2	12
> 2 -2.5	20

Discussion:

Carpal ganglions are the commonest soft tissue swellings around the wrist.In this study all the patients presented in the second through the fourth decades of life and most of them were females(80%).This is comparable with the epidemiological data of wrist ganglions[3]. At least 10% of the patients gave a history of a preceding traumatic event with the appearance of ganglions,and most investigators theorize that a history of repeated minor trauma is a predisposing factor in their development[6,10,11].This statement explain the majority(80%)of the patients in our study who presented with ganglions involving the wrist of dominant hands which are more vulnerable for repeated trauma because of their frequent use.

Most of the paients(70%) presented with ganglions over the dorsal aspect of wrist,while the remaining (30%) presented with volar wrist ganglions. This is consistent with the results of Thornburg[2], that 60-70% of wrist ganglions occur over the scapholunate ligament and nearly 20% of them present over the volar aspect of wrist

crease between the flexor carpiradialis and abductor pollicis longus at the scaphotrapezoid joint.However,the presence of ganglions on the dorsal or volar aspect of the wrist is of no significance as a cause of presentation[p = 0.2].

The sizes of the ganglions in our study ranged between 1-2.5 cm in diameter,this is closely comparable with what was reported by Thornburg[2] ,Rishi[12],and Nishikawa[13].Regarding the perception of ganglions as a disease;the majority presented for cosmetic reasons (50%)and to lesser extent for being concerned about malignancy(30%).The other patients sought help because of pain.These results are comparable with that of Westbrook[14]who reported that 38% of the patients expressed cosmetic concerns,28% were concerned about malignancy,26% presented because of pain and only 8% with restricted hand function or altered sensation.This supports the conclusions of other authors that pain,no matter how commonly present,is rarely significant or impairs the activity and is not usually impetus for seeking medical care[9,15,16] .However,it can be stated that it is a matter of personal perception and does not affect the modality of treatment. From the previous reports on wrist ganglions,the success in each treatment varied and depended on the type of treatment.For aspiration alone which is the mainstay of non surgical treatment,most studies demonstrated a success rates approximating 30-50 %[17,18].,although Zubowics obtained a success rate of 85% but after three repeated aspirations[19].These results were comparable with that of group (A) in our study,the recurrence rate was 50%. Based on the mistaken theory that ganglions are inflammatory in origin,local steroid injection after aspiration of cyst contents was adopted by many investigators but the recurrence rates were still high and in fact the success is realy no better than that of aspiration alone because there is no evidence supporting inflammation as a cause of ganglions[20].

Rishi et al [12],adopted another non surgical technique by aspiration of cyst contents and leaving Linen polyfilament braded thread inside.Linen provokes a strong inflammatory response.Gang and Makhlouf[21] used silk instead of Linen.No recurrences were reported by Rishi et al after two years of follow-up compared to 5% by Gang and Makhlouf.However,pain was persistent in 61.5% of the cases managed by Rishi et al and in 33% of that of Gang and Makhlouf[12,21]. In comparing the success rate in group (B) of our patients (80%),with those of aspiration alone or aspiration and steroid injection(30-50%) , our technique provided encouraging results.We assume that this decrease in the recurrence rate was due to the fibrosis that results either from irritation of the cyst by the istilled blood or organization of that blood,hence establishing a cystodesis state.However,further histological and ultrasound or MRI studies are recommended to confirm this assumption.On comparing the results of Rishi , Gang and Makhlouf,their techniques seem to be more superior in terms of recurrence although the differences is not so significant.Persistant pain following the procedure in their patients which is most probably due to the massive production of fibrosis induced by linen or silk threads compressing the small cutaneous nerves in the area,made our technique more suitable especially for those whose main reason for presentation is pain. In addition,Gang and Makhlouf reported 10% of local wound infection which is an additional disadvantage of thread techniques.Regarding the surgical excision ; prior to the work of Angelides[6],the post operative recurrent rates were as high as 40% but since the adoption of radical surgical technique that includes excision of the entire ganglion complex and a cuff of the adjacent joint capsule,the recurrence rates have improved significantly. Hence,Varly[20]had a success rate of 73% and Clay[22] 97% in their reports.However,this radical procedure had its own complications:persistent pain which may be the result of damage to cutaneous nerves in the area or the development of reflex sympathetic dystrophy. Scapholunate dissociation,joint stiffness, decreased grip strength,neuroma,unsightly scar and even damage to the palmar cutaneous branch of median nerve and radial artery during surgery for volar ganglions have all been reported and there are also the risk associated with the use of general anaesthesia and upper limb torniquets[2,9,21,22].Arthroscopic resection also provides low recurrence rate.Ho et al[23] used this technique for dorsal wrist ganglions with a recurrence rate of 26%.Luchetti[24] reported a recurrence rate of 7%. Hence,it can be stated that the operative treatment is one of the best methods when considering the recurrence only but it also needs an expertised surgeon to deal with these ganglia by the radical excision or arthroscopically which is difficult to be available all the time in addition to that the complications that may associate the surgical procedure lessen the superiority of this technique. From another point of view,the patient might have other reasons for seeking medical advice such as cosmetic reasons or being anxious about malignancy. So our technique can be considered as an alternative method which has the advantages in ; simplicity , can be performed in an out-patient setting with an acceptably low rate of complications. In our technique,the volar wrist ganglions were much more likely to recur than the dorsal wrist ganglions(6 patients in group A and 3 patients in group B).This is in an agreement with the result of;Nahara[1],Thornburg[2], Write[16], and

Edwards[25].The risk of lacerating the adjacent palmar cutaneous branch or radial artery might probably be the cause of incomplete evacuation or excision which was inversely reflected on the results of treating volar wrist ganglions by our or others techniques.We preferred using cannulas to needles to minimize the associated injury that may occur. Recurrences in our technique were reported after 1 to 12 months so this mandating the follow-up programme to be plolonged for about two years so as to provide a sufficient period for detecting any recurrence.

Conclusions:

Ganglions commonly involve patients in the second through the fourth decades of life,and females are more commonly involved.Cosmetic reasons and being anxious about malignancy are the commonest causes of presentation.Our technique in aspiration of ganglions and autologus blood instillation is simple, minimally invasive office procedure which gives reliable and accebtable results.It is useful as a first line procedure leaving the surgical excision for the recurrences.It is scarless therefore it is easily accepted by the patients .

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